



PORTLAND CEMENT CONCRETE UNBONDED OVERLAY MSP-91-12E

1.0 Description. This work shall consist of applying a debonding material and constructing a portland cement concrete unbonded overlay as required in this special provision and in accordance with details and locations shown on the plans. Work also includes minor surface pavement repair, joint filling, and other associated operations.

1.1 Note to engineer and contractor: Unbonded overlay is intended to be placed with a relatively uniform thickness on a relatively flat, old or new, bituminous surface. If the existing surface is concrete or in case of severe surface elevation problems, there should be provisions elsewhere in the contract for a 1" (25 mm) minimum thickness bituminous interlayer. That interlayer is designed to correct irregularities and restore the grade so that the final unbonded concrete pavement is a uniform thickness. In that or other cases of new bituminous surface, there should be no pay item included for a concrete volume or for surface preparation. If unbonded concrete is being placed over old, existing bituminous surface, there should be pay items included for surface preparation, volume of concrete and placement of concrete.

2.0 General. All procedures and materials for the concrete unbonded overlay shall meet applicable provisions of Sec 502 for non-reinforced concrete pavement except as herein described.

3.0 Materials. All materials shall conform to Division 1000, Materials Details, unless otherwise noted.

3.1 The debonding material between the existing roadway or shoulder surface and the new concrete pavement overlay shall be one of the following.

3.1.1 A white pigmented curing compound meeting Sec 1055 and applied at the rate of 200 square feet per gallon (5 square meters per liter).

3.1.2 Whitewash, a mixture of hydrated lime and water mixed at the rate of 100 pounds of lime per 12.5 gallons (1 kilogram of lime per 1 liter) of water, applied at a rate of 200 square feet per gallon (4 square meters per liter) of mixture.

3.1.3 An alternate material will be considered provided it can be demonstrated to provide a) lack of bond between asphalt concrete and portland cement concrete overlay, b) a white coloration to reflect and control heat buildup in the base pavement, c) no detrimental effect to the asphalt and/or concrete overlay as a result of the use, and d) reasonable durability under traffic resisting removal prior to overlay. Upon request, the contractor shall provide any testing necessary to demonstrate these properties. Approval shall be obtained from the State Materials Engineer prior to use. Requests for approval shall include a specific description of the proposed material, applicable material safety data sheets, and the proposed application rate and are subject to uniform and satisfactory application.

3.2 Bituminous patching material, for use in repair of minor spalls in the existing surface, shall be a commercial bituminous patching material meeting the approval of the engineer.

3.3 Dowel bars shall be 1 ½ inch (38 mm) in diameter and meet Sec 1057.1.

3.4 Tie bars shall be epoxy coated and meet Sec 1057.1.

4.0 Construction. Preliminary work, including joint sealing, and patching, may be done under traffic as allowed elsewhere in the contract. Prior to placement of the debonding material, the traffic shall be diverted as noted elsewhere in the contract, and the remaining operations shall commence.

4.1 Surface Preparation.

4.1.1 All existing pavement cracks and joints shall be sealed or re-sealed where required, to keep overlay material and incompressibles from penetrating unsealed joints. All holes greater than 2 inches (50 mm) in width and 1 inch (25 mm) in depth, in the surface of the traffic lanes (not shoulders), shall be patched by filling with the bituminous patching material. It shall be compacted to a flat, tight surface.

4.1.2 When 1" (25 mm) minimum bituminous interlayer is required in the contract, the existing surface shall be prepared prior to interlayer placement as necessary to insure a final flat, smooth surface to grade. Any preparation for that work shall be included in the price for the interlayer.

4.1.3 Before the unbonded overlay shall be placed, the base surface shall be free of loose material and relatively flat, without bumps or indentations.

4.1.4 Debonding material is to be applied uniformly at the designated rate. Any concrete patches shall be covered at twice the designated rate. If the material is removed by rain, wear or other means to the extent that the reflective or bond-breaking properties may not be effective, it shall be re-applied.

4.1.5 In order to properly locate the saw cuts in the overlay, the location of all transverse expansion (Type E) joints and longitudinal lane joints in the existing pavement shall be identified by a reliable method. The contractor shall receive approval from the engineer for the procedure to be used to mark and relocate existing joints.

4.2 Tie bar, dowel, and joint saw depths are as shown on plans. Tie bars are required for both the centerline and shoulder longitudinal joints.

4.3 Dowel bars shall be installed the full unbonded overlay width and the baskets firmly anchored to the existing surface.

4.4 New transverse joints are not required to match the existing transverse joints, however, new transverse expansion joints and longitudinal lane joints shall be cut or placed to match the underlying joint configuration.

4.5 Any transverse expansion joints in the existing pavement shall be specifically marked and identified as such. The expansion joint shall be precut in the plastic concrete, to allow for any slab movement until sawing can be started. As soon as sawing may be possible, the contractor shall saw two full-depth cuts on each side of the precut joint following the edges of the underlying expansion joint, as shown on the details. The concrete between the saw cuts shall be removed and disposed of by the contractor at its expense at a location meeting the approval of the engineer.

4.6 Concrete pavement thickness' shown on the plans are nominal dimensions and are expected to be maintained, except for local variations in the grade. The minimum allowable thickness at any point, as determined by sticking the finished, plastic concrete, is plan thickness less 0.6 inch (15 mm).

4.7 Trucks used for transporting concrete will be permitted to drive on the pavement being overlaid and deposit concrete directly in front of the concrete spreader, provided no loose foreign material is tracked onto the surface.

5.0 Method of Measurement.

5.1 When required, measurement for furnishing unbonded overlay concrete will be to the nearest 0.1 cubic yard (meter), using the count of batches incorporated into the unbonded overlay.

5.2 Measurement for placing unbonded overlay concrete will be computed to the nearest 0.1 square yard (meter). Final measurement of the completed pavement will not be made except for authorized changes during construction, or where appreciable errors are found in the contract quantity. The revision or correction will be computed and added to or deducted from the contract quantity.

5.3 Measurement for surface preparation of the existing pavement surface will be computed to the nearest square yard (meter), including traffic lanes and shoulders. Final measurement will not be made except for authorized changes during construction, or where appreciable errors are found in the contract quantity. The revision or correction will be computed and added to or deducted from the contract quantity.

6.0 Basis of Payment.

6.1 When there is direct pay for volume of unbonded concrete listed in the contract, the accepted volume of portland cement concrete for the unbonded overlay will be paid for at the contract unit price for "Unbonded Overlay Concrete", per cubic yard (meter). Further payment for the placement of the portland cement concrete unbonded overlay will be paid for at the contract unit price for "Unbonded Overlay Placement", per square yard (meter). No direct payment will be made for furnishing labor, equipment, dowels, reinforcement and other materials to place, finish, texture and cure the overlay including sawing and sealing the joints, in accordance with the plans and specifications. Payment for surface preparation, including application of the debonding material, patching, joint filling of the existing surface and any other incidental work and material necessary to complete this item will be paid for at the contract unit price for "Surface Preparation", per square yard (meter).

6.2 When there is no direct pay for the volume of unbonded concrete, payment for the placement of the portland cement concrete unbonded overlay will be paid for at the contract unit price for "Unbonded Overlay Pavement", per square yard (meter) for the thickness specified. No direct payment will be made for furnishing labor, equipment, dowels, reinforcement and other materials to place, finish, texture and cure the overlay including sawing and sealing the joints, in accordance with the plans and specifications. Also, there will be no direct pay for surface preparation.

6.3 Any adjustments in payment as a result of the profilograph index or pavement thickness deficiency of the unbonded overlay will be made to the contract unit price for "Unbonded Overlay Concrete", "Unbonded Overlay Placement", and "Surface Preparation", each, for the segments involved. For this purpose, the "Unbonded Overlay" per cubic yard (meter) price will be adjusted to a square yard (meter) price based on the plan overlay thickness.

6.4 Payment for full depth and partial depth repairs shall be in accordance with Sec 613.

6.5 Payment for bituminous interlayer shall be in accordance with Sec 403.